Report Date: 03 Nov 2014

Summary Report for Individual Task
011-219-1010
Prepare a Department of the Army Form 7345-R (GR/CS Takeoff and Landing Data Card)
Status: Approved

Condition: Given a completed DD Form 365-4, the RC-12K/N/P/X series airplane operator's manual, airport information, environmental conditions at takeoff, and a blank DA Form 7345-R. This task should not be trained in MOPP 4.

Standard: Appropriate common standards and the following additions/modifications:

1. Correctly compute performance data IAW procedures given in the aircraft operator's manual and the description below.

2. Re-compute GR/CS TOLD card data if conditions increase by 1,000 feet pressure altitude (PA), 10 degrees Celsius or 500 pounds gross weight (GWT).

Special Condition: None

Safety Risk: Medium

MOPP 4: Never

Task Statements

Cue: None

DANGER

None

WARNING

If the takeoff WT cannot be reduced because of mission requirements to meet single-engine performance during takeoff, then selecting arunway that meets AccelerateStop is recommended. Commandersmust evaluate the mission requirements versus single-engine takeoffperformance capabilities and address the associated risks of notmeeting AccelerateStop distances and single-engine climb capabilities in the mission briefing/risk assessment process.

CAUTION

None

Remarks: None

Notes: Performance planning software may be used to compute GR/CS TOLD card data. The software must be approved for use by the Program Executive Office (PEO)-AVN. DA Form 7345-R must be used during ATP evaluations.

Performance Steps

1. Crew actions.

a. The PC will compute or direct the other crew member to compute the aircraft performance data IAW the instructions provided below.

b. The PC will verify that the aircraft meets the performance requirements for the mission and brief the other crew member.

c. The PC will ensure that aircraft limitations and capabilities are not exceeded.

2. Procedures.

a. DA Form 7345-R (figure 4-2, page 4-11, and figure 4-3, page 4-12) is an aid for organizing takeoff and landing planning data. This form provides an easy reference for aircraft performance during takeoff, takeoff emergencies and landing at the destination. The GR/CS TOLD card will be computed prior to takeoff and should be updated prior to landing. It is a primary risk management tool for both the crew and commander to determine the MAX acceptable payloads, minimum runway lengths and associated risks.

b. The most accurate performance data can be obtained by using existing conditions. If mission or time constraints preclude using these conditions, use the highest PA and TEMP forecast for the departure time. Instructions for completing the items are given in the aircraft operator's manual and supplemented by the instructions below. The crew should be aware of variables between pre-computed and actual performance such as a change in runway conditions.

3. Supplemental instructions.

Note: Speeds that are listed as “All WTs” or are published as a single number and do not have a chart that varies the speed with WT are required memory items. The GR/CS TOLD card eliminates the requirement to list speeds that do not change; for example, VENR or VYSE.

a. Front (figure 4-2, page 4-11).

(1) TEMP °C. Record the TEMP in degrees Celsius forecast for the time of departure.

(2) PA. Record the PA forecast for the time of departure.

(3) Takeoff WT. Record the takeoff WT obtained from the DD Form 365-4 or the adjusted takeoff WT determined from the reverse side of the TOLD card. If the takeoff WT is adjusted, verify the WT and balance of the adjusted WT.

(4) Runway Avail. Record runway length (including overrun distance if applicable) for the planned departure runway.

(5) Static Power.

(a) K Record the engine TQ in percent, from the Minimum Static Takeoff Power at 1,700 RPM – Flaps Up chart.

(b) N/P/X Record the engine TQ from the Static Takeoff Power at 1,700 RPM with Ice Vanes Retracted chart.

(6) Static Power.

(a) K If required, record the engine TQ in percent from the Minimum Static Takeoff Power at 1,700 RPM – Flaps Approach chart.

(b) N/P/X If required, record the engine TQ in percent from the Static Takeoff Power at 1,700 RPM with Ice Vanes extended.

(7) Tire Speed Limit – Flaps 0%. N/P/X Compute the tire speed limit using zero wind component from the MAX Takeoff WT – Flaps Up as limited by the Tire Speed chart.

(8) V1- Flaps 0%. Record the Flaps-Up V1 for the takeoff GWT using the Takeoff Speed – Flaps Up chart.

(9) VR - Flaps 0%. Record the Flaps Up VR for the takeoff WT using the Takeoff Speed Flaps Up Chart.

(10) V2 – Flaps 0%. Record the Flaps Up V2 for the takeoff WT using the Takeoff Speed – Flaps Up chart.

(11) Takeoff distance - Flaps 0%. Do not consider head wind during takeoff computations unless mission criticality demands it. However, if takeoff must be made downwind, include the tail wind in takeoff computations. Adjust the distance for takeoff with the ice vanes extended, runway slope or winds as appropriate.

(a) N Record the distance required for takeoff using the Takeoff Distance Flaps Up chart. The distance is from brake release to 50 feet AGL.

(b) K/P/X Record the distance required for takeoff using the Takeoff Distance – Flaps Up chart. The distance can be computed from brake release to an altitude between 0 to 50 feet AGL.

(12) Accelerate Stop - Flaps 0%. Record the accelerate stop distance from the Accelerate – Stop Flaps Up chart. Adjust the distance for takeoff with the ice vanes extended, runway slope, or winds as appropriate. This is the total distance from brake release, accelerating to V1, reject the takeoff and then stopping using ground fine and MAX braking.

(13) Tire speed limit – Flaps 40%. N/P/X Compute the tire speed limit using zero wind component from the MAX Takeoff WT – Flaps Approach as limited by the Tire Speed chart.

(14) V1 - Flaps 40%. Record the Flaps-Approach V1 for the takeoff GWT using the Takeoff Speed – Flaps Approach chart.

(15) VR - Flaps 40%. Record the Flaps Approach VR for the takeoff WT using the Takeoff Speed – Flaps Approach chart.

(16) V2 – Flaps 40%. Record the Flaps Approach V2 for the takeoff WT using the Takeoff Speed – Flaps Approach chart.

(17) Takeoff Distance - Flaps 40%. Record the runway distance required for takeoff. Do not consider head wind during takeoff computations unless mission criticality demands it. However, if takeoff must be made downwind, include the tail wind in takeoff computations. Adjust the distance for takeoff with the ice vanes extended, runway slope or winds.

(a) N Record the distance required for takeoff using the Takeoff Distance – Flaps Approach chart. The distance is from brake release to 50 feet AGL.

(b) K/P/X Record the distance required for takeoff using the Takeoff Distance – Flaps Approach chart. The distance can be computed from brake release to an altitude between 0 to 50 feet AGL.

(18) Accelerate Stop - Flaps 40%. Record the accelerate-stop distance from the Accelerate – Stop Flaps Approach chart. Adjust the distance for takeoff with the ice vanes extended, runway slope, or winds as appropriate. This is the total distance from brake release, accelerating to V1, reject the take off, and then stopping using ground fine and MAX braking.

(19) VREF. Guardrail Common Sensor Aircraft have a single VREF for all WTs. This block may be used for that VREF, for a no flap VREF or left blank.

(20) Land Distance. Record the runway distance required for landing at the destination. It is not necessary to record the landing distance for returning immediately after takeoff. Since the takeoff distance required will always exceed landing distance required you can assume the runway you departed on is long enough to return and land on in the event of an emergency. This does not imply
that the aircraft should be landed above its certified MAX landing WT unless an emergency warrants
it.

(a) K Normal Landing Distance Without Propeller Reversing – Flaps Down.

(b) N/P/X Normal Landing Distance – Flaps Down.

(21) Optional. Use this area as desired.

b. Back (figure 4-3, page 4-12). Use to determine if takeoff WT needs to be restricted to achieve desired single-engine performance if an engine fails during takeoff. If Flaps Up or Flaps 40% meets the desired performance, it is not required to compute both. The back of the card should be completed first.

(1) General instructions. Using the planned departure WT, TEMP and PA, obtain the data from the charts listed below for the planned flap setting. If the single-engine climb criteria are met, enter the departure WT on the front side of the TOLD card and obtain the takeoff data. If a segment(s) does not meet single ENG performance criteria, using the worst condition, back plan on that chart to determine the takeoff WT that would satisfy climb performance. Re-compute the back side of the TOLD card, using this adjusted takeoff WT to verify the WT reduction meets all performance criteria. Enter the
adjusted WT on the front of the TOLD card in takeoff WT block. The commander will determine the minimum criteria for items 2n through 5 as part of risk management. The values given are for information only, based on the airplane certification under Title 14 CFR Part 25.

(2) Accelerate – Go. Use this area to enter the MAX distance of accelerate-go allowed if required by the commander’s policy. This segment is one of the most restrictive for planning because the aircraft will be departing ground effect; the gear will be in transient, creating drag and attempting to accelerate to V2.

(3) Net Takeoff Flight Path – First Segment (%). This segment begins at VR and ends after obtaining V2 and the gear is fully retracted. It is a high drag segment and a positive rate of climb is highly recommended.

(4) Net Takeoff Flight Path – Second Segment (%). The second segment begins from the point the gear is fully retracted, ends at 400 feet above ground level (AGL), and is flown at V2. Recommended minimum gradient of climb is 2.4% for VMC. A climb gradient of 3.3% is required for IMC departures. A climb gradient of greater than 3.3% may be required for departures with other than
standard takeoff/departure procedures.

(5) Net Takeoff Flight Path - Third Segment (%).The third segment begins after the Acceleration and Flaps retraction segment ends by obtaining VENR. while maintaining takeoff power until reaching VENR or 5 minutes and then reduce power to MAX continuous. The takeoff path ends at 1,500 feet AGL and clear of obstacles. Recommend a minimum of 1.2 percent climb gradient for VMC operations.

(6) Max Takeoff WT for One Engine Climb at Lift-off – Flaps 0%. Determine if the planned takeoff WT is equal to or less than the charted limit. If the planned departure WT is more than the MAX chart WT for the conditions, continuing the takeoff is not an option unless the takeoff WT is reduced.

(7) Accelerate – Go – Flaps 0%. Determine the total takeoff distance from brake release to clear a 50-foot obstacle if an engine failure occurs at V1. Accelerate – Go Distance Over a 50-Foot Obstacle – Flaps Up.

(8) Net Takeoff Flight Path – First Segment – Flaps 0%. Use the Net Takeoff Flight Path – First Segment – Flaps Up - One Engine Inoperative chart to determine the gradient of climb.

(9) Net Takeoff Flight Path – Second Segment Flaps 0%. Use the Net Takeoff Flight Path – Second Segment – Flaps Up –One Engine Inoperative chart to determine the gradient of climb.

(10) Net Takeoff Flight Path - Third Segment – One Engine Inoperative – Flaps 0%. Use the Net Takeoff Flight Path –Third Segment – One Engine Inoperative chart to determine the gradient of climb.

(11) Adjusted Takeoff WT Flaps 0%. Enter the adjusted takeoff WT, if WT had to be reduced to meet one engine inoperative criteria. Enter this WT on the front of the TOLD card as the takeoff WT.

(12) Max Takeoff WT to Achieve a Positive Climb at Lift-off – Flaps 40%. Determine if the planned takeoff WT is equal to or less than the charted limit, using the MAX Takeoff WT – Flaps Approach To Achieve Positive One Engine Inoperative Climb at Lift-off chart.

(13) Accelerate – Go – Flaps 40%. Determine the distance from the Accelerate – Go Distance Over a 50-Foot Obstacle – Flaps Approach.

(14) Net Takeoff Flight Path – First Segment – Flaps 40%. Use the Net Takeoff Flight Path – First Segment – Flaps Approach - One Engine Inoperative chart to determine the gradient of climb.

(15) Net Takeoff Flight Path – Second Segment – Flaps 40%. Use the Net Takeoff Flight Path – Second Segment – Flaps Approach – One Engine Inoperative chart to determine the gradient of climb.

(16) Adjusted Takeoff WT – Flaps 40%. Enter the adjusted takeoff WT, if WT had to be reduced to meet one engine inoperative criteria. Enter this WT on the front of the TOLD card as the takeoff WT.

Note: The same TOLD may suffice for consecutive takeoffs and landings if the crew verifies that the existing TEMP, PA and WT do not degrade performance.

c. Takeoff flight planning. This section is designed to supplement the explanations of the takeoff charts in the operator's manuals and provide options available for takeoff flight planning (figure 4-4, page 4-16, and figure 4-7, page 4-24) The performance charts in the operator's manuals reflect planning data required for the aircraft type certificate. The pilot is responsible for understanding and using the appropriate charts for takeoff planning. The charts available allow the pilot to determine, if he did lose an engine at the critical
point of takeoff (V1), what his best option would be: continue the takeoff; abort the takeoff and stop; or
reduce his planned takeoff WT to increase the aircraft's performance.

d. Takeoff WT considerations. The takeoff WT may be limited by the most restrictive of the following:

(1) MAX certified takeoff WT (structural).

(2) MAX takeoff WT permitted by takeoff field length.

(3) MAX takeoff WT to achieve a positive climb at lift-off.

(4) Accelerate Go distance over 50-foot obstacle.

(5) Net takeoff flight path – Second segment.

(Asterisks indicates a leader performance step.)

Evaluation Guidance:
Evaluation will be conducted academically.

Evaluation Preparation:
Training will be conducted academically.

PERFORMANCE MEASURES	GO	NO-GO	N/A
1. Computed or directed the other crewmember to compute the aircraft performance data IAW the instructions provided.			
2. Verified that the aircraft meets the performance requirements for the mission and briefed the other crew member.			
3. Ensured that aircraft limitations and capabilities are not exceeded.			

Supporting Reference(s):

Step Number	Reference ID	Reference Name	Required	Primary
	TM 5-4210-219-10	OPERATORS AND OPERATION MAINTENANCE INSTRUCTIONS FOR AIRCRAFT CRASH AND STRUCTURAL FIRE FIGHTING TRUCK, USAF TYPE A/S32P-19 (NSN 4210-01-137-9944) (W/O STRUCTURAL FIRE FIGHTING KIT);USMC TYPE A/S32P-19A	No	No
	TM 55-1510-219-CL	OPERATORS AND CREWMEMBERS CHECKLIST FOR ARMY MODEL RC-12D AIRCRAFT, (NSN 1510-01-087-9129) (EIC: SRC) PILOTS CHECKLIST (REPRINTED W/BASIC INCL C1)	No	No

Environment: Environmental protection is not just the law but the right thing to do. It is a continual process and starts with deliberate planning. Always be alert to ways to protect our environment during training and missions. In doing so, you will contribute to the sustainment of our training resources while protecting people and the environment from harmful effects. Refer to FM 3-34.5 Environmental Considerations and GTA 05-08-002 ENVIRONMENTAL-RELATED RISK ASSESSMENT.

Safety: In a training environment, leaders must perform a risk assessment in accordance with ATP 5-19, Risk Management. Leaders will complete the current Deliberate Risk Assessment Worksheet in accordance with the TRADOC Safety Officer during the planning and completion of each task and sub-task by assessing mission, enemy, terrain and weather, troops and support available-time available and civil considerations, (METT-TC). Note: During MOPP training, leaders must ensure personnel are monitored for potential heat injury. Local policies and procedures must be followed during times of increased heat category in order to avoid heat related injury. Consider the MOPP work/rest cycles and water replacement guidelines IAW FM 3-11.4, Multiservice Tactics, Techniques, and Procedures for Nuclear, Biological, and Chemical (NBC) Protection, FM 3-11.5, Multiservice Tactics, Techniques, and Procedures for Chemical, Biological, Radiological, and Nuclear Decontamination.

Prerequisite Individual Tasks : None

Supporting Individual Tasks : None

Supported Individual Tasks : None

Supported Collective Tasks : None